CHAPTER 7

WILDLIFE HAZARD MANAGEMENT TRAINING FOR AIRPORT PERSONNEL

This engine on a Boeing-747 was damaged by ingesting a Lappet-faced vulture *upon departure from Nairobi, Kenya, January 1998. (Photo by R. A. Dolbeer, USDA)*

7.1 INTRODUCTION

The management of wildlife is a complex endeavor. Once a Wildlife Hazard Management Plan is in place, the plan must be implemented by well-trained and knowledgeable individuals to be successful.

Depending on the size of an airport and the level of wildlife hazard, the Wildlife Hazard Management Plan may be implemented by a single airport employee undertaking wildlife control activities on an occasional “as needed” basis or by a full-time wildlife biologist with a staff of operations personnel providing continuous bird patrols. Many of the personnel involved in these control activities, hereafter referred to as Wildlife Control Personnel (WCP), may have no formal education in wildlife biology. However, all WCP should have sufficient training to be knowledgeable in the basic principles of wildlife management and in the identification, behavior, general life history and legal status of the hazardous species in the area. WCP also must be trained in the proper implementation or deployment of the various control strategies and techniques outlined in the Wildlife Hazard Management Plan. Finally, an awareness of endangered and threatened wildlife species which may visit or reside at the airport is critical.

Table 7-1 Ranking of 21 wildlife species or species groups by relative hazard to civil aircraft based on percent of reported strikes causing damage or effect-on-flight, 1991-1997. This list does not factor in the relative abundance of species groups which will vary greatly among airports. For a given airport, a low-ranking species group with a high population may actually pose more of a hazard than a high-ranking group that is rarely present (from Dolbeer et al. unpublished manuscript).

	Composite ranking[a]	Relative hazard score[b]
Deer (all species)	1	100
Vultures (black & turkey)	2	63
Geese (all species)	3	52
Osprey	4	50
Sandhill cranes	5	48
Pelicans (white & brown)	6	44
Ducks (all species)	7	37
Eagles (bald & golden)	8	31
Hawks (buteos)	9	25
Rock dove (pigeon)	10	24
Gulls (all species)	11	22
Herons (all species)	12	22
Coyote	13	20
Mourning dove	14	17
Owls (all species)	15	16
American kestrel	16	14
Shorebirds (all species)	17	12
Crows/ravens (all species)	18	12
Blackbirds/starling (all species)	19	9
Sparrows (misc. small birds)	20	4
Swallows (all species)	21	2

[a] 1 = most hazardous species group; 21= least hazardous group.

[b] Relative hazard risk based on sum of percent of strikes by species group causing damage or effect-on-flight scaled downward from 100 (with 100 being score for species group with maximum summed values).

7.2 TRAINING

The following areas of training and levels of skill are suggested for WCP implementing control activities at airports under a Wildlife Hazard Management Plan. It is emphasized that, once a plan is in place, in addition to the training provided to the WCP, there should be periodic oversight and review of the plan and its implementation by a professional biologist trained in wildlife damage control (14 CFR 139.337 [e][6]).

7.2.a Bird Identification

There are over 600 species of birds that reside in, or migrate through, the United States. Many of these species, such as gulls, have quite different plumage patterns and bill colors as subadults (year of hatching up to 3 years in some species) than as adults (as an example, see Appendix I for a fact sheet on North American gulls). Some birds, such as laughing gulls, European starlings and black-bellied plovers, have different summer and winter plumage patterns and bill colors. In other species, such as northern harriers and red-winged blackbirds, males and females appear quite different. Some species are present in an area all year, others only in migration (spring, fall), and others only in winter or in summer. All species have unique vocalizations, behaviors, and habitat preferences that are useful in field identification. Thus, to become an expert in field identification of all bird species at a location requires many years of training and practice.

Certain species of waterfowl will occasionally hybridize (e.g., this mallard/northern pintail cross), making their offspring difficult to identify without professional assistance. (Photo by E. C. Cleary, FAA)

WCP should have basic training so that they can identify, in all plumages, common birds on the airport that are hazardous to aviation. Table 7-1 provides a list of the relative hazard of various species groups based on the percent of reported strikes that cause damage or an effect-on-flight. WCP also should be able to identify those rarer species that are considered hazardous when present or are of concern because of endangered-species status.

Binoculars are essential for detailed, close-up observations sometimes necessary for identification as well as for the detection and identification of birds or other wildlife at a distance. WCP should have binoculars available and be trained in their use.

Each WCP should have his or her own bird identification field guide, which should be carried in the vehicle while on patrol. As a learning aid, WCP should be encouraged to

make annotations in their field guides regarding behavior or appearance next to identified birds.

There are a number of excellent field guides available from bookstores, some of which are listed at the end of this chapter. There are also bird identification guides available on CD ROM which provide useful life-history information and vocalizations.

7.2.b Mammal Identification

Unlike birds, there are typically only a few mammal species of importance on an airport. WCP should be able to identify, not only by sight but also by sign (e.g., tracks, burrows, and fecal material), the common large and mid-sized mammals (e.g., deer, raccoons, woodchucks, coyotes) that live around the airport. WCP should also be able to identify signs (e.g., trails in grass, burrows) indicative of a population eruption of field rodents such as voles or rats. A survey by a biologist using snap traps may be necessary to identify the exact species of rodents using airport habitat.

Field rodents are strong attractants to birds of prey. The assistance of a professional wildlife biologist may be necessary to identify the rodents using airport habitat. (Photo by E. C. Cleary, FAA)

Burt and Grossenheider (1998) is a good general field guide covering mammals throughout the United States (full citation at end of Chapter). In addition, there are many state and regional field guides for identifying mammals and their signs. Each airport should have a mammal field guide in its wildlife library.

7.2.c Basic Life Histories and Behavior of Common Species

In addition to learning to identify the hazardous birds and mammals on the airport, WCP should have some understanding of the biology and behavior of these species. This information will make the job of wildlife hazard management more interesting as well as be useful in anticipating problems and deploying control measures more effectively.

For each species of bird, it is important to know if the species is present year-round or only in summer, winter, or during migration. For example, in which habitats and at what time of year do locally breeding bird species nest and when are young fledged? What are the daily movement patterns between roosting, feeding and loafing areas in relation to the airport? What feeding behaviors and food preferences does the species have on the airport? Which habitats does the species prefer? How does each species react to approaching aircraft and to various repellent devices? By being observant and noting

the behavior of these hazardous species, useful insights may be gained that will lead to more effective habitat management or repellent strategies.

Most bird and mammal field guides provide information on geographic range, feeding habits and habitat preferences for each species. Ehrlich et al. (1988) provide a concise summary of life history information (nesting, feeding, habitat) for most birds in North America. Appendix I provides some life-history facts for various gull species in the United States. Such books and fact sheets provide an excellent starting point for knowledge about a species. However, the most useful information will come from careful observation of what the birds and mammals are doing on your airport.

Remains of a red-tailed hawk struck by an aircraft at an airport in Illinois, 1995. Hawks often are attracted to grassy areas at airports to feed on rodents. (Photo by R. A. Dolbeer, USDA)

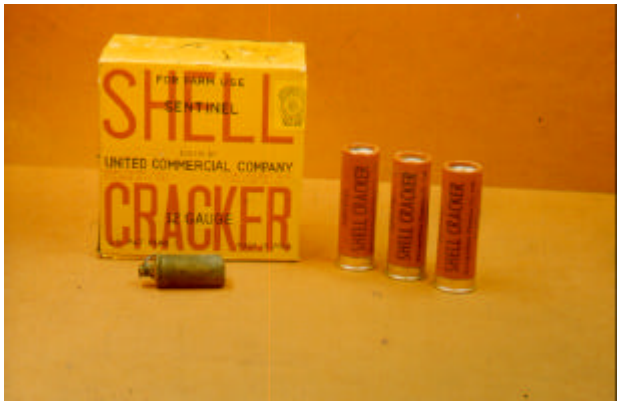
7.2.d Wildlife and Environmental Laws and Regulations

As presented in Chapter 4, there is a complexity of federal and state laws protecting wildlife and regulating the issuance of permits to take (capture or kill) individuals causing problems. In addition, environmental laws and regulations regarding pesticide applications, drainage of wetlands, and endangered species must be considered in implementing Wildlife Hazard Management Plans. All WCP should have a basic understanding of the federal Migratory Bird Treaty Act (MBTA) whereby almost all native migratory birds are protected regardless of their abundance (see Chapter 4). WCP should understand that federal and often state permits must be issued before these species can be taken on an airport. WCP should also understand that wild mammals are regulated at the state level, which may require permits for activities involving removal. Non-native birds, such as pigeons, house sparrows and starlings, and gallinaceous game birds, such as turkeys, grouse and pheasants, are not protected by the MBTA but may have state protection. WCP on an airport involved in taking any wildlife species should have a clear understanding of which species have no legal protection and, for all others, the species and numbers allowed to be taken under permits issued. Permits also will list the methods of removal and disposition of removed wildlife.

7.2.e Wildlife Control Techniques

Chapter 9 provides a brief description of most wildlife control techniques used at airports. WCP will need training to deploy these techniques safely and effectively.

Firearms. It is critical that only personnel trained in the use of firearms, authorized under depredation permit, and knowledgeable in field identification of the target and similar-looking nontarget species, are allowed to use firearms on the airport. Skill, experience and the proper equipment are needed to be safe and to maximize the effectiveness of a shooting program, whether it be to remove specific problem animals or to kill 1 or more individuals to reinforce repellent techniques. All discharged shell casings are potential Foreign Object Debris (FOD) and should be picked up.



Pyrotechnics can be a fire, FOD, and human safety hazard if used improperly. Also, birds can quickly habituate to pyrotechnics. Therefore, only trained personnel should use pyrotechnics at an airport. (Photo courtesy USDA)

Pyrotechnics. Pyrotechnics can cause injury or damage if discharged incorrectly or carelessly. For example, serious injuries have occurred when pyrotechnics were accidentally discharged inside vehicles. Proper equipment (safety glasses, ear protection) and training is essential for safe use of pyrotechnics. In addition, training is needed to deploy the correct pyrotechnic for each situation and wildlife species and to minimize habituation. It is critical that pyrotechnics (and other repellent devices) not be deployed in situations where the birds or mammals might be flushed into the path of departing or arriving aircraft.

Pesticide application. WCP applying restricted-use pesticides, applying pesticides for hire, or applying pesticides to the land of another, must be a Certified Applicator, or working under the direct supervision of a Certified Applicator and then may only use pesticides covered by the Certified Applicator's certification. Proper application equipment and safety clothing must be used. Detailed records of pesticide applications must be maintained.

For information on the training requirements for becoming a Certified Pesticide Applicator, contact the State University Cooperative Extension Service.

Distress call tapes, propane cannons and miscellaneous techniques. As emphasized in Chapter 9, a major problem in the use of repellent techniques or devices is habituation of the wildlife species to the threats. These techniques all require training for their proper deployment. The most critical factor for most repellent devices is that they be deployed sparingly and appropriately when the target wildlife is present, and be reinforced occasionally by a real threat such as shooting. More detailed information on the use of various repellent devices is presented in Chapter 9 and Hygnstrom et al. (1994).

7.2.f Record Keeping and Strike Reporting

A key component of a Wildlife Hazard Management Plan is developing a system to 1) document the daily activities of the WCP, 2) log information about wildlife numbers and behavior on the airport, and 3) record all wildlife strikes with aircraft. This information is essential to document the effort being made by the airport in reducing wildlife hazards. The information is also extremely useful during periodic evaluations of the Wildlife Hazard Management Plan and when revisions to the plan are proposed. All WCP should be instructed on the importance of record keeping and be trained to record this information in a standardized format. Chapter 8 provides more detail about record keeping and wildlife strike reporting.

7.3 SOURCES OF TRAINING

Wildlife control workshops at airports-. Books, manuals and videos can provide a starting point for building skills to manage hazardous wildlife at airports. However, hands-on training is essential to develop the necessary skills and confidence to successfully and safely carry out wildlife control activities. Workshops on Airport Wildlife Control offered by the U.S. Department of Agriculture, Wildlife Services or other entities are an excellent means of obtaining training in wildlife identification, legal issues, and the deployment of various control techniques specific for a given airport or region of the country. These workshops can be held for all WCP at a single airport or at a centralized airport with participants coming from airports throughout the state or region.

Training, provided by recognized experts, should include classroom instruction, fieldwork, and attendance at conferences such as Bird Strike Committee USA, Bird Strike Committee Canada, and AAAE's Airport Wildlife Hazard Workshops. (Photo by E. C. Cleary, FAA)

Contact the Wildlife Services office in your state (Appendix A) for more information.

Bird Strike Committee USA meetings-. Bird Strike Committee USA (BSC-USA) holds joint meetings annually with Bird Strike Committee Canada at a U.S. or Canadian airport. This annual meeting provides an excellent forum to discuss the latest issues and techniques in wildlife control for airports. The meeting includes a field trip to the host airport with demonstrations by vendors and wildlife specialists of various wildlife control equipment and techniques. Chapter 3 provides more information on BSC-USA. Information on annual meetings, as well as information on various aspects of wildlife hazard management for airports, can be found at BSC-USA's web site: **www.birdstrike.org**.

Hunter safety and firearms courses-. Airport personnel who will be using firearms should complete a hunter safety or firearms safety course. The state wildlife agency can provide information on these courses.

Miscellaneous courses and activities-. Many universities and some community colleges offer courses in ornithology, principles of wildlife management, principles of wildlife damage control or other related topics. Local Audubon Society chapters or park districts sometimes offer workshops or short courses in field identification of birds. Participation in conservation organization activities such as Christmas Bird Counts and spring migration counts is an excellent means of building bird identification skills and developing contacts with local wildlife experts.

7.4 WILDLIFE HAZARD MANAGEMENT LIBRARY

Many species of wildlife have adapted to urban environments, as exemplified by these ring-billed gulls nesting on a roof in Cleveland, Ohio. Airport wildlife control personnel need to monitor areas on and near airports for nesting and roosting populations of birds hazardous to aircraft. Note the ineffectiveness of the owl effigy in frightening the gulls. (Photo by R. A. Dolbeer, USDA)

Every airport with a Wildlife Hazard Management Plan should have a designated location for reference books such as wildlife field guides, videos, posters, and other training and educational materials. Ideally, this wildlife library should be located at the site where information on wildlife control activities and wildlife strikes is entered into logs, files and databases.

7.5 FIELD GUIDES AND REFERENCE BOOKS

There are many excellent field guides and reference books for learning about wildlife. Listed below is a selection of books that cover North America or large regions of the United States. There are also many field guides for individual states and specialized books for various wildlife species or species groups. This list should not be considered an endorsement of these books to the exclusion of others that may be available.

Field Guides - Birds

Bull, J., J. Farrand, Jr., and, L. Hogan. 1994. National Audubon Society field guide to North American birds: Eastern region. Knopf, New York. 796 pages. 2nd edition.

Dunn, J. L., and E. A. Blom. 1999. National Geographic field guide to the birds of North America. National Geographic Society. 464 pages. 3rd edition.

Griggs, J. L. 1997. All the birds of North America: American Bird Conservancy's field guide. HarperCollins. 172 pages.

Peterson, R. T. 1998. A field guide to the birds: a completely new guide to all the birds of Eastern and Central North America. Houghton Mifflin Company, New York. 384 pages. 4th edition.

Peterson, R. T. 1990. A field guide to Western birds: a completely new guide to field marks of all species found in North America west of the 100th meridian and north of Mexico. Houghton Mifflin Company, New York. 431 pages. Reissue edition.

Robbins, C. S., B. Bruun, and H. S. Zim. 1983. Birds of North America. Golden Press, New York. 360 pages.

Field Guides - Mammals

Burt, W. H., and R. P. Grossenheider. 1998. A field guide to the mammals: North America north of Mexico. Houghton Mifflin Company, New York. 3rd edition.

Murie, O. J. 1954. A field guide to animal tracks. Houghton Mifflin Company, New York. 374 pages.

Life Histories

Ehrlich, P. R., D. S. Dobkin, and D. Wheye. 1988. The birder's handbook: a field guide to the natural history of North American birds, including all species that regularly breed north of Mexico. Simon and Schuster, New York. 785 pages.

Chapman, J. A., and G. A. Feldhamer (editors). 1982. Wild mammals of North America. Johns Hopkins Univ. Press, Baltimore, MD. 1,147 pages.

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